Training the Next Generation of Research Mentors: The University of California, San Francisco, Clinical & Translational Science Institute Mentor Development Program

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Abstract

Mentoring is a critical component of career development and success for clinical translational science research faculty. Yet few programs train faculty in mentoring skills. We describe outcomes from the first two faculty cohorts who completed a Mentor Development Program (MDP) at UCSF. Eligibility includes having dedicated research time, expertise in a scientific area and a desire to be a lead research mentor. A post-MDP survey measured the program's impact on enhancement of five key mentoring skills, change in the Mentors-in-Training (MIT) self-rated importance of being a mentor to their career satisfaction, and overall confidence in their mentoring skills. Since 2007, 29 MITs participated in and 26 completed the MDP. Only 15% of the MITs reported any previous mentor training. Overall, 96% of MITs felt that participation in the MDP helped them to become better mentors. A majority reported a significant increase in confidence in mentoring skills and most reported an increased understanding of important mentoring issues at UCSF. MITs reported increased confidence in overall and specific mentoring skills after completion of the MDP. The MDP can serve as a model for other institutions to develop the next generation of clinical-translational research mentors.

Keywords: mentoring, faculty, clinical and translational research

Introduction

Mentoring is a critical component of career development and success for academic health sciences faculty[1] particularly for those committed to careers in clinical and translational research. The availability of outstanding mentors has been proposed as an essential means of ensuring a pipeline for training researchers[2–4] and for recruiting and retaining clinician-scientists.[5] Influential and sustained mentorship has been found to enhance the productivity of research fellows [6] and conversely, lack of a mentor was identified by junior faculty as a major factor hindering career progress in academic health sciences.[7] Dedicated, skilled mentors are needed to ensure success in research and thus, it is critical that research faculty be trained to be effective mentors.[5]

At academic health centers, the success of a clinical translational research enterprise depends on a robust mentoring program. In addition to training mentors, the program should also promote institution-wide networking and cross-disciplinary research and collaboration to enhance career satisfaction and career management.[8] To our knowledge, few academic health science universities have developed formalized training programs for mid-career clinical translational science research mentors.

The University of California, San Francisco (UCSF) Clinical and Translational Science Institute's (CTSI) Mentor Development Program (MDP) was established to train the next generation of clinical and translational research mentors. We describe the structure and content of the UCSF CTSI MDP and present outcomes from the first two cohorts of Mentors-in-Training (MITs).

Methods

CTSI Mentor Development Program Overview

In 2006, the UCSF CTSI (http://ctsi.ucsf.edu/) was one of the first 12 academic institutions selected to be part of the National Institutes of Health (NIH) clinical and translational science consortium. One of the unique aspects of the UCSF proposal and a key component of the UCSF CTSI is a Mentor Development Program (MDP) aimed at improving the mentoring skills of mid-career clinical translational research faculty members. The primary goal of the MDP is to train *mid-career and early senior* clinical and translational research faculty in the knowledge and art of mentoring so that they can more effectively mentor the *next generation* of clinical and translational researchers.

The MDP builds on the improved climate for career support catalyzed in part by the campus-wide UCSF Faculty Mentoring Program (FMP) that launched in early 2006. The UCSF FMP (http://acpers.ucsf.edu/mentoring/) is a campus wide program run by the Office of the Vice Provost, Academic Affairs, Faculty Development and Advancement aimed at improving the availability and quality of mentoring for UCSF faculty in all four professional schools. The primary goal of the FMP is to ensure that all junior faculty members are paired with a Career Mentor to oversee and support their professional development. Senior Faculty Mentoring Facilitators serve in each department and school to manage junior faculty mentor-mentee pairs and to assist the Director of the Faculty Mentoring Program in disseminating mentoring best practices across the campus. The Director of the

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The curriculum consists of 10 case-based seminars:

1. Defining Mentorship from the Beginning

Panel discussion of the mentoring team concept, specifically defining roles and expectations for the Lead Mentor, Co-Mentors and Career Mentors as well as the mentee.

2. Rewards and Challenges of Mentoring

Panel discussion to provide better understanding of potential challenges, as well as more insight into the rewards, of a mentorship relationship. Case vignettes are selected by MITs for panel discussion.

3. Communicating Effectively with Mentees

MITs are introduced to the essential building blocks of effective communication such as personal awareness, emotional intelligence and active listening; and these concepts are reinforced through interactive exercises. Specific challenges to mentor-mentee communication are demonstrated by workshop facilitators and mentoring 'case vignettes' allow participants to practice new approaches and techniques in a supportive environment.

4. Balancing Work & Life

In this seminar, senior mentors and MITs share personal stories of work-life challenges and discuss successful (and unsuccessful) approaches toward dealing with these issues. Campus resources for maintaining a successful work-life balance are presented.

5. Understanding Diversity among Mentees

This workshop aims to increase the MITs appreciation of the importance of diversity at UCSF and its impact on the mentoring climate. MITs participate in a reflective exercise on awareness of difference and several vignettes that illustrate challenges of mentoring in a diverse academic community are discussed.

6. Understanding Academic Advancement Policies

The academic advancement process is complex and a clear understanding of the process is critical to optimize chances for academic success. All mentors must understand the academic review process to optimally direct research mentees to allow for prioritization of activities.

7. Understanding Economic & Fiscal Realities for Successful Academic Careers

The focus is on specific issues with understanding of research funds flow. Topics covered include how: to read fiscal data; often to expect financial updates on grants; to stay ahead of spending problems; to identify problems; to build funds for future use and to apply and teach these tools to mentees. We also review how to diversify your portfolio of projects to withstand changes in funding priorities.

8. Leadership Skills & Opportunities: How to build a successful Research Team

This seminar focuses on providing participants practical skills in developing and motivating others. Participants are first introduced to a number of concepts including identification of what motivates employees to peak performance, elements of job satisfaction and the four crucial elements for motivation. Participants are introduced to the Hersey and Blanchard[14] model and then apply it to a number of example employee situations to frame context and relevance. Following this, participants are divided into small groups and given a series of case studies to discuss and the results are presented to the larger group.

9. Understanding Intramural & Extramural Grants

A successful grant portfolio is essential for all mentees. With an esteemed panel of senior researchers, case-based scenarios, and group discussion, mentors-in-training are provided with resources and shared experiences to assist their mentees with grant writing and acquisition.

10. IRB: Navigating the UCSF Application Process

MITs are introduced to the Institutional Review Board (IRB) campus leadership and through case examples learn how to avoid pitfalls and to work more effectively and efficiently with the IRB.

Table 1. UCSF Mentor Development Program Curriculum

Faculty Mentoring Program (MDF) also serves as the Co-Director of the CTSI Mentor Development Program.

MDP Curriculum

The CTSI Mentor Development Program was developed by the Director (JSB), the Director of the campus wide Faculty Mentoring Program and at least one Assistant Director from each of the four professional schools (BJG, RJ, JK, JPW-K, KAL, KY), a leadership team with extensive mentoring experience and broad knowledge of research activities at UCSF. The curriculum was developed via an iterative process using literature review, expert opinion, and face to face and electronic faculty forums. The curriculum consists of 10 case-based seminars (*Table 1*) held during monthly half-day meetings over a five-month period. Each seminar was developed and led by an MDP Director or senior research faculty member and included expert panelists from within and outside UCSF.

The monthly schedule included two seminars each morning and time for Mentors-in-Training (MITs) to network with each other and with senior mentors. An MDP wiki site was developed that included mentoring resources, seminar outlines, illustrative mentoring cases, and the opportunity to add observations and comments to the mentoring cases. Seminars were recorded and available for viewing on DVDs, creating an online resource for the entire UCSF community. At the end of the final seminar, time was allotted for MITs to discuss the overall program.

Mentoring Team and Mentor Role Definitions

The leadership team agreed early on in the curriculum development process that for a successful research career, mentees need a *mentoring team* consisting of different types of mentors, each with distinct roles (*Table 2*). The key to the mentoring team is the *lead mentor*, who is responsible for developing the creative

1. Lead Mentor

- Responsible for one to three junior researcher mentees, meeting with them on a regular basis, minimally twice a month
- Expert in their scientific area
- Able to guide mentees in the following areas:
  - ➢ Professional research & academic skills (promotion and tenure)
  - ➢ Career advice & management: develop a five-year plan
  - ➢ Develop a feasible, coordinated research plan
  - ➢ Provide resources: databases, access to space, research staff, access to funding and potential funding sources (campus and national)
  - ➢ Collegial networking: national, international
  - ➢ Assist with communication of findings including oral presentations, writing of abstracts, manuscripts and development of grants
- Assist with developing a mentoring team and insuring ongoing communication with Co-Mentors

2. Co-Mentors

- Responsible for working with the lead mentor on overall mentoring responsibilities (as outlined above) for the mentee and for providing particular guidance in their areas of expertise
- Responsible for one to three mentees depending on number of Lead Mentor responsibilities

3. Career Mentor

- A senior faculty member responsible for providing career guidance and support for their junior faculty mentees but may not be intimately familiar with the mentees' research interests.
- Assigned by the Faculty Mentoring Program Mentoring Facilitator in each department or school.
- Expected to meet with the mentee at least every six months to review overall career goals and advise them on issues related to advancement and promotion.
- Should not be a mentee's direct supervisor but will almost always be in their home department.

4. Advisor

- In general, advisors have informal relationships with mentees and may or may not have a concordant area of research but are familiar with the institution and program.
- Can assist in developing and refining their program of research, networking, family advice, and help launch their career. Meetings are usually arranged on an as needed basis.

*Adapted from the UCSF Clinical & Translational Sciences Training K12 Clinical Research Career Development Awards.

Table 2. UCSF CTSI Mentor Development Program Definition of Mentor Roles*

and independent research career of their mentee. In addition to having expertise in the mentee's scientific area, lead mentors must be familiar with resources and databases within and outside of their discipline at UCSF and have their own resources including research staff available to help facilitate the mentee's research. The Lead Mentors assist with developing a multidisciplinary mentoring team that includes up to one to two Co-Mentors. Ideally, at least one Co-Mentor would be trained in an area that complements rather than replicates the lead mentor's expertise. For example, if the lead mentor is trained in clinical research, at least one Co-Mentor should be trained in laboratory-based research, or vice versa. This multidisciplinary mentoring team is coordinated with the mentee's departmental Career Mentor (overseen by the departmental Faculty Mentoring Facilitator of the UCSF FMP).

Application and Selection Process

Eligibility for the MDP includes: 1) being a mid-level or early senior faculty member; 2) dedicated research time; 3) expertise in a scientific area; 4) a desire to be a Lead Mentor for one to three junior faculty within the next few years; and 5) a commitment to attend monthly morning meetings for five months. The application includes an applicant goal statement, a letter of support from the applicant's department chair or head of their research unit, and an NIH biosketch or CV. The applicant statement includes

a description of immediate and long-term career objectives in mentoring junior investigators; a summary of the applicant's research career; and a description of any prior experience as a mentor. A letter of support from the applicant's department chair describes the applicant's role in the department or school, the benefits the applicant would derive from participation in the MDP, and a guarantee of release time for one morning per month for five months. The MDP leadership reviews the applications and selects those most appropriate for the program. Specific criteria for selection of MITs includes: 1) Expertise in a scientific area of inquiry supported by independent research funding; 2) Adequate additional resources available to help support a broader research agenda that includes junior mentees; 3) Demonstration that they have progressed to the point in their career where they have the competence and confidence to transition to the mentor role; 4) Affiliation with a department or research unit that is conducive to mentoring; and 5) Clear endorsement from the department chair to participate in the program. Enrollment was limited to no more than 15 MITs per cohort for the first two cohorts described in this paper.

Program Assessment Tools

Prior to attending the first MDP seminar, all MITs completed an online Pre-MDP Assessment Survey. The survey included questions on their academic training and current academic rank,

professional school, primary research activity, gender, ethnicity, and percent time spent on research and other activities. MITs were also asked if they had any prior formal mentor training and rated their overall agreement with the importance of being a mentor to their career satisfaction and overall confidence in their mentoring skills on a 5 point Likert scale (1=strongly disagree to 5=strongly agree). Similarly, they rated their confidence in their ability to assist mentees on specific mentoring skills. Individual mentor training seminars were evaluated on their content, panel members, and success in increasing understanding of specific mentoring issues.

A post-MDP survey asked about specific programmatic aspects that MITs found useful and what was learned from the program. An overall assessment of the program's impact on enhancement of five key mentoring issues (mentor skill building tips, becoming a better mentor, introduction to policies and procedures, mentoring plans/goals, and increased interaction with other mid level mentors and with senior faculty) were reported on the same 5 point Likert scale described above. Using the same questions as the pre-MDP survey and 5 point Likert scale, change in the MITs' self-rated importance of being a mentor to their career satisfaction and overall confidence in their mentoring skills after the MDP was assessed. To assess how the MDP Program influenced specific mentoring skills, questions from the pre-MDP survey were repeated on the post-MDP survey.

Statistical Analysis

Demographic characteristics are reported as number and percent of MITs. To determine the impact of the MDP, we report the percent of respondents who answered 'agree' or 'strongly agree' to the post-MDP assessment questions. Average, standard deviation and percent with improvement of the pre and post skills confidence questions are reported. Paired t-tests were used to evaluate statistically significant changes. Open ended responses were analyzed by three investigators using open coding methods.[9] Analyses were performed using SAS Version 9.1 (SAS Institute, Cary, NC). P-values less than 0.05 were considered statistically significant.

Results

Since its inception in 2007, 29 MITs (out of 40 applicants) were selected to participate in the UCSF CTSI Mentor Development Program and 26 (90%) completed the program. Of those who completed the program, 46% were female, 77% white, most held an MD degree (64%) and were in the School of Medicine (81%) (*Table 3*). The majority of MITs were at the Associate Professor rank (58%), nearly three quarters reported that they spent at least 50% of their time engaged in research, and most were primarily performing clinical or health services research (85%). Few MITs reported any previous mentor training (15%).

Most MITs felt that the MDP had a significant impact on their mentoring skills (*Table 4*). For example, 96% agreed that the program helped them to become a better mentor, and 92% agreed that it had enhanced their understanding of mentoring issues at UCSF. One MIT said: "*I have more knowledge about UCSF policies and procedures so I can better help my mentees.*" Another MIT wrote: "*The MDP answered not only the questions I knew to ask but also the questions I didn't know to ask! This is an essential [program] that every mentor needs to complete.*"

In addition, we found a marked improvement from the pre-to-post MDP surveys in overall importance of being a mentor to career satisfaction (mean pre-MDP agreement score 1.4 (+- 0.5)

Question	Value	N (%)
Gender	Female	12 (46)
	Male	14 (54)
Race	White	20 (77)
	Asian	4 (15)
	Multi	1 (4)
	Other	1 (4)
Degree*	M.D.	16 (64)
	Ph.D.	6 (24)
	M.C.R./M.P.H./M.S.C.	7 (28)
	Pharm.D	1 (4)
	R.N.	2 (8)
	Other	3 (12)
School	Dentistry	2 (8)
	Medicine	21 (81)
	Nursing	2 (8)
	Pharmacy	1 (4)
Faculty rank	Assistant Professor	4 (15)
	Associate Professor	15 (58)
	Professor	7 (27)
% TIME spent on research	<25	3 (12)
	25–49	4 (15)
	50–74	7 (27)
	>74	12 (46)
% Time in clinic	0	8 (31)
	<25	12 (46)
	25–49	3 (12)
	50–74	2 (8)
	>74	1 (4)
Primary research type	Clinical	19 (73)
	Health services	3 (12)
	Laboratory	4 (15)
Prior mentor training	Yes	4 (15)
*Degrees not mutually exclusive		

Table 3. Baseline Characteristics of UCSF Mentors-in-Training 2007–08 (N = 26)

Skills	Agree or strongly agree N (%)
Offered mentor skill-building tips	25 (96%)
Helped me become a better mentor	25 (96%)
Focused my mentoring plans/goals	25 (96%)
Increased interacting with others	25 (96%)
Enhanced understanding of mentoring issues at UCSF	24 (92%)
Introduced me to important policies and procedures	23 (88%)
Increased interaction with senior faculty	23 (88%)

Table 4. Overall assessment of MDP Impact on Mentoring Skills (N = 26)

Mentoring skill	Pre-test confidence average*	Post-test confidence average†	% Improved‡
	Mean (±SD)	Mean (±SD)	
Acquire pertinent skills	1.8 (±0.6)	4.4 (±0.6)	26 (100)
Design a research project	1.5 (±0.5)	4.5 (±0.9)	26 (100)
Communicate research findings via conferences	1.5 (±0.5)	4.5 (±0.9)	26 (100)
Prepare and publish research manuscripts	1.4 (±0.5)	4.4 (±0.8)	26 (100)
Understand the expectation for advancement and promotion	2.1 (±0.8)	4.5 (±0.6)	25 (100)
Communicate effectively with colleagues	2.2 (±0.5)	4.3 (±0.6)	26 (100)
Improve clinical care	1.8 (±0.8)	4.2 (±1.3)	17 (100)
By serving as a role model	2 (±0.5)	4.3 (±0.7)	23 (100)
Identify professional goals and interests	1.6 (±0.7)	4.5 (±0.6)	25 (96)
Seek opportunities to network and build professional collaborations nationally and internationally	2.3 (±0.7)	4.2 (±0.6)	24 (96)
Understand economic and fiscal realities for an academic career	2.3 (±0.9)	4.3 (±0.7)	24 (96)
Develop a research focus	1.8 (±0.6)	4.4 (±0.8)	24 (92)
Determine long-term career plans	2.1 (±0.8)	4.4 (±0.6)	24 (92)
By providing emotional support	2 (±1)	4.3 (±0.8)	24 (92)
Seek opportunities to network and build professional collaborations on campus	2.2 (±0.7)	4.3 (±0.6)	24 (92)
Balance professional and personal demands	2.4 (±0.9)	4 (±0.8)	22 (85)
Develop a promotion package	2.6 (±0.6)	4.1 (±0.8)	21 (84)
Obtain research/grant funding	2.2 (±0.8)	4.1 (±0.7)	20 (80)
Understand Research Group/Lab Management	2.3 (±0.7)	4.1 (±0.9)	20 (80)
Understand how to effectively approach translational research	2.5 (±0.9)	4 (±0.8)	20 (77)
Find resources (eg, space, staff, databases	2.4 (±0.8)	3.8 (±0.7)	19 (76)
Improve time management skills	2.5 (±0.9)	4 (±0.8)	19 (73)
Get a job	2.4 (±1)	3.7 (±0.8)	18 (72)
Assess departmental/organized research unit goals to match mentee goals	2.9 (±0.8)	4.1 (±0.9)	16 (70)
Improve teaching skills	2.8 (±0.9)	3.9 (±1)	17 (68)

All values on the scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5)
*Pre- MDP Question: I am confident in my ability to help my mentee: Mentoring skill item
†Post-MDP Question: How has the MDP influenced your mentoring skills? I am confident in my ability to help my mentee: Mentoring skill item
‡% Improved: Movement of one category from pre-MDP assessment of specific skill to post-MDP assessment
~All are P<0.001~

Table 5. Change in MIT confidence in specific mentoring skills from baseline (pre-Mentor Development Program) compared to the post-program assessment (N = 26)

to mean post-MDP score 4.8 (+-0.4) P<0.001) and overall confidence in mentoring skills (mean pre-MDP agreement score 2.2 (+-0.5) to post-MDP score 4.2 (+-0.5) P<0.001. This increase in confidence is illustrated by one MIT who commented in the post-MDP survey: *"I will use what I learned in this [program] to focus my mentoring, allowing me to better choose my mentees and to be a more effective mentor to them."*

Table 5 demonstrates the change in MIT confidence in their specific mentoring skills from the baseline pre-MDP survey to completion of the MDP program. After completion of the program, the MITs significantly improved in their confidence in mentoring skills in all items (p <0.001). Specifically, MITs' noted improved confidence in their ability to help their mentees in understanding the expectations for advancement and promotion, economic and fiscal realities for a successful academic career, research group/lab management, how to effectively approach translational research, identifying professional goals and interests, resources (space, staff, etc.) and seeking opportunities to network and build professional collaborations. One MIT in the post-program survey commented: *"The MDP seminars helped me understand the issues among junior faculty and provided more systematic ways to deal with them. These are valuable experiences that I will most definitively incorporate into my own skills."*

Discussion

We describe a novel Mentor Development Program (MDP) created by the UCSF CTSI, in concert with the campus wide Faculty Mentoring Program, to train mid-career and early

senior clinical and translational research faculty in critical mentoring knowledge and skills. We found that the MDP had a significant impact on the participants' assessment of their mentoring skills after completion of the program. Notably, the MITs reported a significantly increased level of confidence in their overall and specific mentoring skills and most reported that they are likely to alter their approach to mentoring as a result of the MDP training. In prior studies, confidence has been shown to be a strong predictor of behavior change[10] and increased confidence in academic career functions have been shown to result from participation in a faculty development training program.[11]

Mentoring functions consist of career functions and psychosocial functions.[12] In brief, career functions are those aspects of a mentoring relationship that support advancement in the organization; psychosocial functions are those aspects of a mentoring relationship that enhance a sense of competence and effectiveness.[13] The CTSI MDP is a comprehensive program that aims to train outstanding mentors who will epitomize excellence in both of these domains. The program created an integrated environment for senior mentors and MITs, encouraged creative and innovative networking around a range of mentoring challenges and developed a toolbox of strategies and collective experiences to build a community of mentoring excellence.

Our findings are limited by lack of a comparison group and the fact that our MITs were volunteers. Our results may not be generalizable to other institutions. We believe that our MITs' increased confidence in their mentoring skills will translate into improved mentoring effectiveness; however, it is premature to collect data on outcomes of mentoring such as improved satisfaction of their mentees with mentoring or enhanced mentee career success.

Translating our findings into effective and sustainable mentorship programs is challenging. To support ongoing professional mentoring development for our MDP graduates, we are developing a peer mentoring program and ongoing networking opportunities for our graduates through annual retreats. At each yearly retreat, the graduates will be re-assessed for changes in their mentoring experience. We are also developing assessment tools for the MDP graduate's mentees to assess mentee satisfaction with their mentoring and mentee career success.

Conclusion

In summary, we believe that well-trained and confident faculty mentors are essential to ensure a pipeline of productive clinical and translational research scientists. Currently, mentor-mentee relationships in the academic health sciences are threatened by increased clinical and administrative demands and the growing competition for funding. We encourage other academic health centers to support specialized training programs such as the Clinical and Translational Science Institute Mentor Development Program to develop mid-level faculty mentors. The UCSF CTSI MDP can serve as a model for other institutions to develop skilled research mentors who will guide the next generation of clinical and translational scientists.

References

1. Sambunjak D, Straus SE, Marusic A. Mentoring in academic medicine: a systematic review. *JAMA.* Sep 6 2006; 296(9): 1103–1115.

2. Moskowitz JP, Thompson JN. Enhancing the clinical research pipeline: training approaches for a new century. *Acad Med.* 2001; 76(4): 307–315.

3. Blixen CE, Papp KK, Hull AL, Rudick RA, Bramstedt KA. Developing a mentorship program for clinical researchers. *J Contin Educ Health Prof.* Spring 2007; 27(2): 86–93.

4. Keyser DJ, Lakoski JM, Lara-Cinisomo S, Schultz DJ, Williams VL, Zellers DF, Pincus HA. Advancing institutional efforts to support research mentorship: a conceptual framework and self-assessment tool. *Acad Med.* Mar 2008; 83(3): 217–225.

5. Kupfer DJ, Hyman SE, Schatzberg AF, Pincus HA, Reynolds CF, 3rd. Recruiting and retaining future generations of physician scientists in mental health. *Arch Gen Psychiatry.* Jul 2002; 59(7): 657–660.

6. Steiner JF, Lanphear BP, Curtis P, Vu KO. Indicators of early research productivity among primary care fellows. *J Gen Intern Med.* Nov 2002; 17(11): 854–860.

7. Jackson VA, Palepu A, Szalacha L, Caswell C, Carr PL, Inui T. "Having the right chemistry": A qualitative study of mentoring in academic medicine. *Acad Med.* Mar 2003; 78(3): 328–334.

8. Bakken LL, Byars-Winston A, Wang MF. Viewing clinical research career development through the lens of social cognitive career theory. *Adv Health Sci Educ Theory Pract.* Feb 2006; 11(1): 91–110.

9. Strauss AC, Corbin J. *Basics of Qualitative Research.* Thousand Oaks: Sage Publications, Inc., 1998.

10. Day R, Allen TD. The relationship between career motivation and self-efficacy with protégé career success. *J Vocat Behav.* 2004; 64: 72–91.

11. Wingard DL, Garman KA, Reznik V. Facilitating faculty success: outcomes and cost benefit of the UCSD National Center of Leadership in Academic Medicine. *Acad Med.* Oct 2004; 79(10 Suppl): S9–11.

12. Kram KE. Improving the Mentoring Process. *Train Dev J.* 1985; 39(4): 40–43.

13. Kram KE. *Mentoring at Work: Developmental Relationships in Organizational Life.* Glenview, IL: Scott Foresman, 1985.

14. Hersey P, Blanchard K. *Management and Organizational Behavior.* Englewood Cliffs, NJ: Prentice-Hall, 1988.